

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Martin C. Zieger

Application No.: 10/676,401

Filed: October 1, 2003

For: LOAD BUILDER

Examiner: Asfand M. Sheikh

Group Art Unit: 3627

Confirmation No.: 7555

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AMENDED APPEAL BRIEF

In response to the Notification of Non-Compliant Appeal Brief mailed August 13, 2009, Applicant submits the following Amended Appeal Brief pursuant to 37 C.F.R. § 41.37 for consideration by the Board of Patent Appeals and Interferences. Please charge any additional amount due or credit any overpayment to the Deposit Account 02-2666.

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I. REAL PARTY IN INTEREST

Martin C. Zieger, the party named in the caption, transferred his rights to the subject Application through an assignment recorded on Reel/Frame No. 014573/0292 in the patent application to SAP Aktiengesellschaft (AG), of Walldorf, Germany. Thus, as the owner at the time the brief is being filed, SAP AG is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, be directly affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-6 and 8-33 are currently pending. Claim 7 is canceled. Claims 12-33 have been withdrawn. The Appellant respectfully appeals the rejections of claims 1-6 and 8-11.

IV. STATUS OF AMENDMENTS

No amendments were submitted after the final Office action.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 recites a method comprising receiving a demand order including a set of products to be shipped (Fig. 1, 101 and page 5, lines 1-27); simulating a loading of a shipment of the set of products into a set of transports (Fig. 3, Fig. 1, 107, page 6, lines 17-25; and page 11, line 15-page 12 line 16); evaluating a shipping rule including a constraint for the shipment during the simulating, the shipping rule permitted to be a complex logical statement (Fig. 3, Fig. 1, 107, page 6, lines 17-25; page 11, line 15, page 12-line 16, and page 16, lines 14-27); attempting to fill each transport in the set in simulating the loading of the shipment (page 12, lines 1-14); and detecting a skipping of a range of the constraint and adjusting the simulating of the loading of the shipment in response to the skipping. (page 14, line 27 – page 15, line 13, Fig. 5, 507)

Claim 2 recites simulating one of a balanced load and a straight load of the

shipment in the transport. (page 15, line 14 – page 16, line 3)

Claim 3 recites, wherein the complex logical statement is defined by a user (page 16, line 19 – page 17, line 2).

Claim 4 recites upsizing the shipment to fill the transport (Fig. 4, 407, page 13, lines 9-21).

Claim 5 recites downsizing the shipment to match a maximum capacity of the transport (Fig. 4, 407, page 13, lines 9-21).

Claim 11 recites attempting to fill at least one transport, the at least one transport having multiple destinations (page 7, lines 3-16).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-6 and 8-11 stand rejected under 35 U.S.C. sec. 103(a) as being unpatentable over U.S. Patent No. 6,937,992 issued to Benda et al (hereinafter “Benda”) in view of U.S. Patent Application No. 2003/0014286 by Cappellini (hereinafter “Cappellini”) and U.S. Patent No 3,970,832 by Itschner (hereinafter “Itschner”).

All of the claims do not stand or fall together. The basis for the separate patentability of the claims is set forth below.

VII. ARGUMENT

A. Overview of the Cited References

1. Benda

Benda discloses a vehicle capacity maximization system (Abstract). Benda uses a set of metrics to maximize loads in transports such that the inventory requirements of the receiving location are met. See col. 4, lines 25-39 of Benda.

However, Benda does not disclose range skipping detection or adjustment.

2. **Capellini**

Capellini discloses a search engine of flexibly-defined paths applicable to the search of transportation-related route (Abstract). The system includes a spatial subsystem, reservation system, dimensional subsystem, rules and optimization subsystem and temporary subsystem amongst others (Abstract and [0185]). These systems and subsystems include calculation of optimal loading procedures for transport and transport schedules (See [0185] - [0189].)

Capellini does not disclose range skipping detection or adjustment.

3. **Itschner**

Itschner discloses a system and method for obtaining an electrical signal corresponding to the enthalpy of steam expressed by Koch's state equation (Abstract). In the form of Koch's state equation which is used, terms of minor significance are neglected and the equation is converted into a logarithmic form suitable for solution by electrical analog computer elements (Abstract). A circuit arrangement comprised of adders, multipliers and function generators is disclosed for simulating and solving the potential and exponential functions in the formula for the enthalpy.

Itschner does not disclose range skipping detection or adjustment.

B. Rejection of Claims 1-6 and 8-11 Under 35 U.S.C. § 103(a)

Claims 1-6 and 8-11 stand rejected under 35 U.S.C. sec. 103(a) as being unpatentable over U.S. Patent No. 6,937,992 issued to Benda et al (hereinafter "Benda") in view of U.S. Patent Application No. 2003/0014286 by Capellini (hereinafter "Capellini") and U.S. Patent No 3,970,832 by Itschner (hereinafter "Itschner").

The Supreme Court noted that the analysis supporting a rejection under 35 U.S.C. § 103 must be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "[r]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated

reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396. The Examiner has not presented a clear line of reasoning to establish a *prima facie* case of obviousness under *KSR*.

1. Independent Claim 1

Claim 1 includes the elements of "attempting to fill each transport in the set in simulating the loading of the shipment." The Examiner acknowledges that Benda fails to teach or suggest this element of claim 1. See page 3 of the final Office action, "Benda fails to disclose ... attempting to fill each transport in the set in simulating the loading of the shipment." The Examiner then relies on Cappellini and cites paragraph [0189] in support of his position. The Examiner did not identify any specific aspect of the paragraph that discloses the recited elements. The only part of paragraph [0189] that appears related states "also various rules can be provided to spread the boxes over multiple containers" and "Space management system 072 can also be capable of calculating optimum loading procedures, including those according to maximum space utilization, or minimum loading and unloading time within defined constraints." However, there is no further explanation as to what these rules would be or how they would be applied such that they would be equivalent to "attempting to fill each transport in the set in simulating the loading of the shipment." The Examiner has provided no further explanation as to how the disclosure of paragraph [0189] reads on these elements of claim 1. These arguments were set forth in the Response to the Final Office Action. However, the Examiner failed to provide any response or clarification in the Advisory Action. The Examiner has not relied upon and the Applicants have been unable to discern any part of Itschner that cures these defects of Benda and Cappellini. Thus, the Examiner has failed to set forth a clear articulation of how these elements are taught or suggested by or otherwise obvious over the cited references. Therefore the Examiner has not satisfied the requirements of *KSR International Co. v. Teleflex Inc.* in regard to this element of claim 1.

Claim 1 includes the elements of "detecting a skipping of the range of the constraint and adjusting the simulating of the loading of the shipment in response to

the skipping.” The Examiner has admitted that Benda and Cappellini fail to teach or suggest these elements of claim 1. See page 3 of the final Office Action. The Examiner relies on Itchner to cure these defects of claim 1 citing col. 2, lines 1-14 in support of this position. However, col. 2, lines 1-14 of Itchner discuss the process of producing a calculation for Koch’s state equation where certain terms of negligible significance are ignored, that is they are not utilized in the calculation of the state equation. See for example, Itchner col. 2, lines 1-20. The Examiner does not clarify how the omission of insignificant terms of the equation is related to the detection of a skipping of a range. The Examiner states “ignoring (e.g. is interpreted to be skipping) and further simulation...of temperature ranges (e.g. is interpreted to be a range of constraint values that are adjusted based on the skipping).” See page 4 of the Final Office Action. The “further” simulation of temperature ranges in Itchner does not reflect adjustment based on the omission of the terms, because the insignificant terms can only be omitted because they have no effect on the outcome of the equation. In other words, the very reason the terms can be omitted is that minimal or no adjustment is needed when omitting them due to their insignificance in producing the results of the equation. Therefore, the Examiner has failed to show that Itchner teaches or suggests this element of claim 1.

Further, Itchner is non-analogous art. Itchner is an apparatus and method for “obtaining an electrical signal corresponding to the specific enthalpy of steam,” (Abstract of Itchner) thus it is wholly unrelated to the field of supply chain management of Benda and Cappellini. In the Final Office action, the Examiner argued that “one of ordinary skill in the art would be motivated to combine the teachings in order to provide method by which data can be reproduced electrically by simple means of accuracy, sufficient for control purposes in a relatively large range.” See pages 4 and 5 of the Office Action. The Examiner does not provide any explanation as to what meaning this would have in the context of the supply chain management systems of Benda and Cappellini. Thus, the Examiner does not properly combine Itchner with Benda and Cappellini. See also MPEP§ 2141.01(a) I (“a reference in a field different from that of the Applicants may be reasonably pertinent if it is one which, because of the matter which it deals, logically would have commended itself to the inventors’ attention considering his or her invention as whole.”) The Examiner has made no

showing that Itschner, which describes a hardware circuit to obtain an electrical signal corresponding to the specific enthalpy of steam, would have been a reference that “logically would have commended itself to an inventor’s attention,” because the inventor would have been an individual in the field of supply chain management and matters related to the enthalpy of steam are clearly not relevant to supply chain management. Therefore, for each of the reasons set forth above, the Examiner has failed to establish a *prima facie* case of obviousness.

Each of these arguments was presented in response to the Final Office Action. The Examiner responded in the Advisory Action to state:

The examiner interprets that the ignoring of a a (*sic*) given range of pressure temperatures during a simulation to be a constraint (e.g., range) that is skipped (e.g. ignored) during a simulation and further the reduction of the negligible significance of these ignored ranges during the Koch state equation calculation is the actual adjustment of the equation based on the skipped constraint (e.g., ignored range). The examiner notes this is an analogous element to the applicant’s claimed invention of a skipping range and adjustment during a simulation and further that one of ordinary skill in the art would have had knowledge to combine the elements of itschner to Benda in view of Cappellini to product (*sic*) a predictable result.

See page 2 of the Advisory Action. The Examiner thus provides no explanation as to how this reference would have commended itself to the inventor’s attention. Also, the assertion that the combination of the hardware circuit for producing an electrical signal corresponding to the specific enthalpy of steam to the supply chain management systems of Benda and Cappellini is entirely conclusory. Further, the Examiner’s apparent position that the removal of the insignificant terms (i.e., the “ignoring” discussed in the above passage) from the Koch equation is equivalent to the “skipping of a range” recited in the claims is nonsensical when juxtaposed with the apparent position of the Examiner that the same removal of the insignificant terms is equivalent to the “adjusting” (i.e., “the reduction of the negligible significance of these ignored ranges”), because this results in an interpretation of the reference that the insignificant

terms are removed in response to removing the insignificant terms. The claims recite that the “adjusting” is “in response to the skipping.”

The Appellants assume that the Examiner is operating under different assumptions than the Appellants about the teachings of Itchner when he states “the reduction of the negligible significance of these ignored ranges during the Koch state equation calculation is the actual adjustment of the equation based on the skipped constraint (e.g., ignored range).” The Examiner provides no support for this statement (i.e., no citation to Itchner) and the statement implies that the Koch equation is modified during its calculation. However, the Appellants have found no discussion of any changes during calculation, much less in response to any modification based on insignificant terms. Rather, from the outset simplified versions of the Koch equation are utilized and the known errors caused by the simplified versions are corrected afterward. See for example, Itchner col. 3, lines 27-45 (describing the fixed circuitry corresponding to different parts of the larger function) and col. 4 lines 16-34 (describing correction of the output). Thus, the Appellants believe the Examiner has not provided a rationale that meets the requirements of *KSR*.

Therefore, for the reasons mentioned above, namely, that the Examiner has failed to establish that the cited references disclose each of the elements of claim 1, that Itchner is non-analogous art and that the rationale for the obviousness rejection does not meet the requirements of *KSR*, the Appellants believe the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the obviousness rejection of claim 1 are requested.

Claims 6, 8, 9 and 10 depend from independent claim 1 and incorporate the limitations thereof. Thus, at least for the reasons mentioned above in regard to independent claim 1, these claims are not obvious over Benda, Cappellini and Itchner. Accordingly, reconsideration and withdrawal of the obviousness rejection of these claims are requested.

2. Claim 2

Claim 2 depends from independent claim 1 and thus incorporates the limitations thereof. For at least the above reasons regarding independent claim 1, the cited

references do not teach or suggest all the limitations of claim 2. Accordingly, the Appellant respectfully requests that this rejection be reversed. Further, the Appellant believes that this claim is separately patentable for the reasons below.

Claim 2 recites “simulating one of a balanced load and a straight load of the shipment in the transport.” The Examiner contends that Benda discloses this aspect at col. 5, lines 15-57 of Benda. See Final Office Action page 5. The Appellants respectfully disagree.

The first paragraph in the cited section discusses a definition for the term “product.” See col. 5, lines 14-20 of Benda. The second paragraph in the cited section discusses determination of capacity sizes for different types of vehicles. See col. 5, lines 21-40 of Benda. The last paragraph of the cited section discusses prior art embodiments in relation to management of customer orders. See col. 5, lines 41-63 of Benda. Thus, the Examiner has failed to support his assertion that “straight loading is used: one shipment then building on the one shipment with another shipment” based on Benda. Further, the Examiner has not relied upon any part of the other references Capellini or Itchner to cure these defects of Benda. Therefore, the Examiner has failed to set forth a clear articulation of the rationale as to how the cited references render the elements recited in claim 2 obvious as required by *KSR*. Accordingly, the Examiner has failed to present a *prima facie* case of obviousness. It is requested that the obviousness rejection of claim 2 be overturned.

3. Claim 3

Claim 3 depends from independent claim 1 and thus incorporates the limitations thereof. For at least the above reasons regarding independent claim 1, the cited references do not teach or suggest all the limitations of claim 3. Accordingly, the Appellant respectfully requests that this rejection be reversed. Further, the Appellant believes that this claim is separately patentable for the reasons below.

Claim 3 recites “wherein the complex logical statement is defined by a user.” The Examiner contends that Capellini discloses this paragraph [0189]. See Final Office Action page 3. The Appellant respectfully disagrees.

Paragraph [0189] discusses “various rules [that] can be provided on how to spread the boxes over multiple containers.” The Appellants have not noted any explicit mention of how such rules are provided in the cited paragraph. Paragraph [0189] appears to imply that such rules are obtained from third party software providers “[f]unctions [such] as these are also known to those familiar to the art of transport space administration and some examples are Visual Load™ developed by August Design, Inc. of Adrmore, Pasadena (www.august-design.com), Truckfill™ developed by Cape Systems, Inc. of Dallas, Tex., U.S.A.” See lines 6-13 of paragraph [0189] of Capellini. Thus, the Examiner has failed to support his assertion that paragraph [0189] of Capelline discloses user defined rules. The Examiner has not relied upon Benda or Itschner to cure these defects of Capellini. Therefore, the Examiner has failed to set forth a clear articulation of the rationale as to how the cited references render the elements recited in claim 3 obvious as required by KSR. Accordingly, the Examiner has failed to present a *prima facie* case of obviousness. It is requested that the obviousness rejection of claim 3 be overturned.

4. Claim 4

Claim 4 depends from independent claim 1 and thus incorporates the limitations thereof. For at least the above reasons regarding independent claim 1, the cited references do not teach or suggest all the limitations of claim 4. Accordingly, the Appellant respectfully requests that this rejection be reversed. Further, the Appellant believes that this claim is separately patentable for the reasons below.

Claim 4 recites “upsizing the shipment to fill the transport.” The Examiner contends that Benda discloses this aspect at col. 5, lines 15-57 of Benda. See Final Office Action page 5. The Appellant respectfully disagrees.

The first paragraph in the cited section discusses a definition for the term “product.” See col. 5, lines 14-20 of Benda. The second paragraph in the cited section discusses determination of capacity sizes for different types of vehicles. See col. 5, lines 21-40 of Benda. The last paragraph of the cited section discusses prior art embodiments in relation to management of customer orders. See col. 5, lines 41-63 of Benda. The Appellants note that the Examiner’s assertion that “straight loading is used: one

shipment then building on the one shipment with another shipment” appears to be a directed at the elements of claim 2 rather than claim 4 as it is the same language utilized to support that rejection. Further, the Examiner has not relied upon any part of the other references Capellini or Itchner to cure these defects of Benda. Therefore, the Examiner has failed to set forth a clear articulation of the rationale as to how the cited references render the elements recited in claim 4 obvious as required by *KSR*. Accordingly, the Examiner has failed to present a *prima facie* case of obviousness. It is requested that the obviousness rejection of claim 4 be overturned.

5. Claim 5

Claim 5 depends from independent claim 1 and thus incorporates the limitations thereof. For at least the above reasons regarding independent claim 1, the cited references do not teach or suggest all the limitations of claim 5. Accordingly, the Appellant respectfully requests that this rejection be reversed. Further, the Appellant believes that this claim is separately patentable for the reasons below.

Claim 5 recites “downsizing the shipment to match a maximum capacity of the transport.” The Examiner contends that Cappellini discloses this aspect at paragraphs [0183] and [0189]. *See* Final Office Action page 3. The Appellant respectfully disagrees.

These paragraphs [0183] and [0189] discuss loading optimizations generally. However, the Appellants have not been able to discern any specific mention of “downsizing” shipments as recited in claim 5. Other than citing these two paragraphs, the Examiner has provided no rationale to support his rejection of claim 5 as obvious. Further, the Examiner has not relied upon any part of the other references Benda or Itchner to cure these defects of Capellini. Therefore, the Examiner has failed to set forth a clear articulation of the rationale as to how the cited references render the elements recited in claim 5 obvious as required by *KSR*. Accordingly, the Examiner has failed to present a *prima facie* case of obviousness. It is requested that the obviousness rejection of claim 5 be overturned.

6. Claim 11

Claim 11 depends from independent claim 1 and thus incorporates the limitations thereof. For at least the above reasons regarding independent claim 1, the cited references do not teach or suggest all the limitations of claim 11. Accordingly, the Appellant respectfully requests that this rejection be reversed. Further, the Appellant believes that this claim is separately patentable for the reasons below.

Claim 11 recites “attempting to fill at least one transport, the at least one transport having multiple destinations.” The Examiner contends that Benda discloses this aspect at col. 5, lines 15-57 of Benda. See Final Office Action page 6. The Appellant respectfully disagrees.

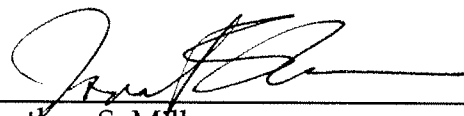
The first paragraph in the cited section discusses a definition for the term “product.” See col. 5, lines 14-20 of Benda. The second paragraph in the cited section discusses determination of capacity sizes for different types of vehicles. See col. 5, lines 21-40 of Benda. The last paragraph of the cited section discusses prior art embodiments in relation to management of customer orders. See col. 5, lines 41-63 of Benda. The Appellants note that the Examiner’s assertion that “attempting to fill the transport via the use of multiple destinations” does not appear in cited section and is not what the Appellants have claimed. Appellants have assumed the use of the term “via” is an error and the examiner intended to say “having” as recited in the claim. Further, the Examiner has not relied upon any part of the other references Capellini or Itschner to cure these defects of Benda. Therefore, the Examiner has failed to set forth a clear articulation of the rationale as to how the cited references render the elements recited in claim 11 obvious as required by *KSR*. Accordingly, the Examiner has failed to present a *prima facie* case of obviousness. It is requested that the obviousness rejection of claim 11 be overturned.

In view of the foregoing, the Appellant respectfully requests that the Board overturn the rejections of claims 1-6 and 8-11.

Respectfully submitted,

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

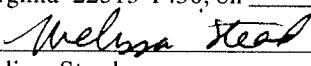
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Melissa Stead 8/24, 2009

VIII. CLAIMS APPENDIX

1. (Previously Presented) A method comprising:
receiving a demand order including a set of products to be shipped;
simulating a loading of a shipment of the set of products into a set of transports;
evaluating a shipping rule including a constraint for the shipment during the
simulating, the shipping rule permitted to be a complex logical statement;
attempting to fill each transport in the set in simulating the loading of the
shipment; and
detecting a skipping of a range of the constraint and adjusting the simulating of
the loading of the shipment in response to the skipping.
2. (Original) The method of claim 1, further comprising:
simulating one of a balanced load and a straight load of the shipment in the
transport.
3. (Original) The method of claim 1, wherein the complex logical statement is
defined by a user.
4. (Original) The method of claim 1, further comprising:
upsizing the shipment to fill the transport.
5. (Original) The method of claim 1, further comprising:
downsizing the shipment to match a maximum capacity of the transport.

6. (Original) The method of claim 1, wherein the shipping rules include at least one constraint including one of a weight constraint, a volume constraint, and a product combination constraint.
7. (Cancelled)
8. (Original) The method of claim 7, wherein simulating includes incrementing an amount of a first product in the shipment by one shipping unit.
9. (Original) The method of claim 8, wherein the shipping unit is a pallet.
10. (Original) The method of claim 1, further comprising:
increasing the amount of the set of products in the shipment by a proportionate number of shipping units of each product.
11. (Original) The method of claim 1, further comprising:
attempting to fill at least one transport, the at least one transport having multiple destinations.
12. (Withdrawn) An apparatus comprising:
a means for simulating a loading of a shipment into a transport;
a means for determining if the shipment fills the transport;
a means for checking if a set of shipping rules are met for the shipment loaded

into the transport, the shipping rules including a logical statement; and
a means for detecting a non-monotone constraint violation.

13. (Withdrawn) The apparatus of claim 12, further comprising:
a means for simulating one of a balanced load and a straight load of the shipment.
14. (Withdrawn) The apparatus of claim 12, wherein the logical statement is user defined.
15. (Withdrawn) The apparatus of claim 12, further comprising:
a means for calculating an increase of a shipment size to include a resource demand for a subsequent time period.
16. (Withdrawn) The apparatus of claim 12, further comprising:
a means for calculating a decrease in a size of a shipment to match a transport size.
17. (Withdrawn) The apparatus of claim 12, further comprising:
a means for detecting a skipping of a range of a constraint.
18. (Withdrawn) A machine readable medium containing therein a set of instructions which when executed cause a machine to perform a set of operations comprising:

receiving a demand order including a set of products to be shipped;
simulating a loading of a shipment of the set of products into a set of transports;
evaluating a shipping rule for the shipment, wherein the shipping rule is permitted to be a complex logical statement;
comparing effects of upsizing and downsizing the shipment of the set of products during the simulating; and
attempting to fill each transport in the set in simulating the loading of the shipment.

19. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations, further comprising:

simulating one of a balanced load and straight load of the shipment in the transport.

20. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations, further comprising:

receiving a user defined shipping rule.

21. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations, further comprising:

increasing a size of the shipment to fill the transport by adding products from a

future demand order.

22. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations, further comprising:

decreasing a size of the shipment to match the maximum capacity of the transport.

23. (Withdrawn) The machine readable medium of claim 18, wherein the shipping rules include at least one constraint including one of a weight constraint, a volume constraint, and a product combination constraint.

24. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations, further comprising:

detecting a skipping of a range of a constraint.

25. (Withdrawn) The machine readable medium of claim 18, wherein simulating includes incrementing an amount of the set of products in the shipment by one shipping unit.

26. (Withdrawn) The machine readable medium of claim 25, wherein the shipping unit is a pallet.

27. (Withdrawn) The machine readable medium of claim 25, having further instructions stored therein, which when executed cause a machine to perform a set of operations further comprising:

increasing the amount of the set of products in the shipment by a proportional number of shipping units of each product.

28. (Withdrawn) The machine readable medium of claim 18, having further instructions stored therein, which when executed cause a machine to perform a set of operations further comprising:

attempting to fill a second transport, the second transport having multiple destinations.

29. (Withdrawn) An apparatus comprising:

a set of demand order modules including a set of products to be shipped in a set of transports;

a set of shipping rule modules permitted to include a complex logical statement;

a loading module to simulate the loading of a shipment of the set of products into the set of transports; and

a processing device to evaluate the complex logical statement in a shipping rule module and to execute the loading module to simulate loading a shipment of the set of products to be shipped and to attempt to fill each transport in the set of transports.

30. (Withdrawn) The apparatus of claim 29, further comprising:

a storage device to store at least one of the set of demand order modules, the set

of shipping rule modules, and the loading module.

31. (Withdrawn) The apparatus of claim 29, further comprising:
a skip detection module to detect the skipping of a constraint.
32. (Withdrawn) The apparatus of claim 29, further comprising:
an upsizing module to increase a size of a the shipment to fill the transport.
33. (Withdrawn) The apparatus of claim 29, further comprising:
a downsizing module to decrease the size of a shipment to match the maximum capacity of the transport.

IX. EVIDENCE APPENDIX

No evidence is submitted with this appeal.

X. **RELATED PROCEEDINGS APPENDIX**

No related proceedings exist.